



# Mercury in Health Care Lab Reagents

Minnesota Technical Assistance Program ■ REFERENCE LIST

Unless you have worked with vendors to eliminate mercury from your lab, a number of your reagents may contain mercury. Mercury—a toxin associated with nervous system disorders—is especially toxic to newborn babies, children and pregnant women. It can also have an adverse effect on wildlife.

The U.S. Environmental Protection Agency (EPA) and the American Hospital Association (AHA) have committed to a voluntary agreement to virtually eliminate mercury waste in hospitals and health systems by 2005. Hospitals have many reasons to reduce their use of mercury. New federal air and water regulations greatly reduce the amount of mercury allowed to be discharged from a municipal wastewater system or an incinerator. Mercury can now be measured at lower levels, making it easier for regulatory agencies to identify facilities that are not in compliance. Reducing mercury in your lab can reduce the level of mercury in the environment and help your facility avoid the need to increase investment in pollution controls and waste disposal.

Mercury is present in many lab reagents as a preservative and as a common contaminant. Thimerosal is a widely-used preservative with a high level of mercury.\* Contaminant mercury comes from mineral mining or from manufacturing processes that use a mercury cell to produce the sodium in sodium products. As a contaminant, mercury's presence may vary from lot to lot.

## Steps to Identify Mercury

Examine your lab chemicals and reagents. Read container labels, Material Safety Data Sheets (MSDS) and inserts that come with the reagents. MSDSs will generally not identify mercury levels below one percent, as manufacturers are not required to list hazardous components of a product below this level.

Contact your sales representatives and product manufacturers to ask about mercury in their products. Request a certificate of analysis (COA) or other data on the mercury concentration of their products. If mercury is not used as a preservative, ask if the mercury cell process is used during production. In evaluating kits, consider each of the reagents separately that make up the kit.

When setting up purchase contracts, require disclosure of all hazardous materials in the reagents as part of the contract.

## Potential Mercury Containing Reagents

A wide variety of laboratory chemicals may contain mercury. This bulleted list from Health Care Without Harm (1997) gives you an idea of where to start looking for mercury in your lab reagents.

- Acetic acid
- Ammonium reagent/Stone analysis kit
- Antibody test kits
- Antigens
- Antiserums
- Buffers
- Calibration kits
- Calibrators
- Chloride
- Diluents
- Enzyme immunoassay test kits
- Enzyme tracers
- Ethanol
- Extraction enzymes
- Fixatives (B5, Zenkers)
- Hematology reagents
- Hormones
- Immunoelectrophoresis reagents
- Immunofixation-phoresis reagents
- Immuno-sal
- Liquid substrate conjugate
- Negative control kits
- Phenobarbital reagent
- Phenytoin reagent
- Positive control kits
- Potassium hydroxide
- Pregnancy test kits
- Rabbit serum
- Shigella bacteria
- Sodium hypochlorite
- Stains
- Standards
- Sulfuric acid
- Thimerosal\*
- Tracer kits
- Urine analysis reagents
- Wash solutions

\* Thimerosal has many synonyms and trade names. For a list, see the link in this resource online.

## Evaluating Brand-specific Reagents

The list was compiled with assistance from the clinical laboratory staff at Park Nicollet Health Services. The data in this reference list was obtained from MSDSs, COAs, letters and manufacturers' Web sites. MnTAP maintains the following list of brand-specific potential mercury-containing lab reagents solely as a service to Minnesota health care facilities. This is not a complete list of mercury-containing reagents.

Vendor / Manufacturer	Product	Percent Thimerosal	Notes
Abbott Labs Hospital Products Division Abbott Park, IL Customer Service 800/323-9100 abbotthosp.com	<b>Aeroset Albumin BCG Kit #7D53</b> Reagent 1	0.025	Manufacturer product list and MSDSs, 2/02
	<b>Aeroset Opiate Kit #1E20</b> Reagent 1	0.049	
	<b>Alcyon Albumin BCG Kit #8D23</b> Reagent 1	0.025	
	<b>AUSZYME® Monoclonal (MC) Kit</b> Conjugate Negative control Positive control	0.01 0.01 0.01	
	<b>AUSZYME® MC Dynamic EIA Kit #7B17</b> Conjugate Negative control Positive control	0.01 0.01 0.009	
	<b>Blood Screen Panels #1044</b> A-H J-N P-Q	0.01 0.01 0.01	
	<b>E coli Agglutinating Serum</b> #9E49-01 to 9E66-01	0.02	
	<b>HCV EIA 2.0 Kit #4A14</b> Conjugate concentrate Conjugate diluent	0.01 0.01	
	<b>HCV EIA Supplemental Kit #4A81</b> Conjugate concentrate Conjugate diluent	0.01 0.01	
	<b>Hepatest-3 HA Confirmatory Kit</b> #9E42-01 Antiserum, absorption cells, normal horse serum	0.01	
	<b>Hepatest-3 HA Kit #8E62-01</b> Control cells and test cells	0.01	
	<b>Hepatitis B (HB) Antigens (Ag)</b> <b>HB Core Ag CORZYME® Kit</b> Antibody to HB Core Ag Peroxidase conjugate	0.01	
	<b>Hepatitis B Surface Antigen (HBsAg)</b> <b>AUSAB® EIA Kit</b> Anti-biotin conjugate Biotin conjugate	0.01 0.01	
	<b>HBsAg Confirmatory Kit # 1012</b> Negative control Reagent	0.01 0.01	
	<b>HBsAg HA Kit #8E60-01</b> Control cells and test cells	0.01	

Vendor / Manufacturer	Product	Percent Thimerosal	Notes
Abbott Labs, continued	<b>HBsAg I<sup>125</sup> AUSAB® Kit</b> Hep BS Ag I <sup>125</sup> Negative control Positive control	None	Contains radioactive I <sup>125</sup> and sodium azide 0.09%, a RCRA P-listed toxic substance, as a preservative.  Manufacturer product list and MSDSs, 2/02
	<b>HBsAg Sensitivity Panels #9108</b> A-G J-N P-S	Trace Trace Trace	Manufacturer product list and MSDSs, 2/02
	<b>Human Immunodeficiency Virus (HIV) AB HIV-1 EIA Kit #3A11</b> Conjugate Negative calibrator Positive calibrator	0.01 Trace Trace	
	<b>HIV AB-II MC Blocking Antibody Kit #3D16</b> Blocking antibody to HIV Control reagent	0.001 0.001	
	<b>HIV AG-1 Anti-rabbit IgG Conjugate #7042</b>	0.01	
	<b>HIV AG-1 MC #1A01</b> Conjugate	0.009	
	<b>HIV AG MC Blocking Antibody Kit</b> Blocking antibody to HIV Control reagent	0.001 0.001	
	<b>HTLV-I 2.0 Kit #9A20</b> Conjugate concentrate Conjugate diluent Negative control Positive control	0.01 0.009 0.01 0.001	
	<b>IMX HBsAG Familiarization Panels #1B50</b> A-E	0.01	
	<b>Murex Cryptococcus #8E15-01</b> Latex reagent	0.01	
	<b>Murex HBe Ag Standard #9E22-01</b> 4 U/ml standard	0.02	
	<b>Murex HIV Antigen #8E77-01</b> Chromogen solution x100	0.02	
	<b>Retrocell HIV-1 #4781</b> Negative control Positive control	0.01 0.01	
	<b>Rotazyme II Kit #7181</b> Conjugate Positive control Sample diluent	0.011 0.011 0.011	
	<b>Salmonella H Agglutinating Serum #8E85-01, 9E98-01, 9E99-01, and 1F01-01 to 1F36-01</b>	0.02	
	<b>Salmonella Typhi Vi Standards Serum #9E14-01</b>	0.01	
	<b>Stained Suspensions #8E50-01 to 8E55-01, #9E28-01 to 9E38-01</b>	0.01	

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Abbott Labs, continued	<b>Syfacard #8E58-01 and 8E58-02</b> VDRL carbon antigen	0.099	Manufacturer product list and MSDSs, 2/02
	<b>TDX Reagents</b>	Possible	Sodium azide, a Resource Conservation and Recovery Act (RCRA) P-listed toxic substance, may be used as a preservative also.  Manufacturer product list and MSDSs, 2/02
	<b>TestPack® Rotavirus #3186 and 6869</b> Positive control	0.01	Manufacturer product list and MSDSs, 2/02
	<b>TestPack® HIV-1/HIV-2 #1A83</b> Negative control Positive control	0.01 0.01	
	<b>Thrombo-Wellcotest Latex and Kit #8E23-01 and 8E26-01</b> Latex	0.01	Manufacturer product list and MSDSs, 2/02
	<b>Unstained Suspension #9E39-01</b>	0.01	
	<b>VDRL Carbon Antigens #8E56-01 and 8E57-01</b>	0.099	
	<b>Vision® Chemistry Calibrators Kit #1434</b> Calibrator B Calibrator C	0.001 0.001	
	<b>Vision® HDL Cholesterol Controls Kit #1475</b> Control I Control II	0.001 0.001	
	<b>Wellcogen Antigen Kit #8E96-01 and 8E96-02</b> Positive control	1.015	
	<b>Wellcogen H. Influenzae Type B #8E88-01 and 8E88-02</b> Positive control	1.015	
	<b>Wellcogen N. Meningitidis #8E92-01 and 8E92-03</b> Positive control	1.015	
	<b>Wellcogen S. Pneumoniae #8E90-02 and 8E91-01</b> Positive control	1.015	
	<b>Wellcogen Strep B #1F44-01 and 8E87-01</b> Positive control	1.015	
	<b>Wellcozyme Anti-HCV Blot #8E71-01</b> Reagent buffer concentrate Wash fluid concentrate	0.099 0.099	
	<b>Wellcozyme HIV Recombinant #8E73-01 and 8E73-04</b> Conjugate x20 concentrate	0.01	
Bayer Corporation Pharmaceutical Division Elkhart, IN Customer Service 800/255-3232 www.bayerchemicals.com	<b>Bayrho-D Kit</b> Immune Globulin 300ug	None	No preservatives  Manufacturer technical bulletin, 10/00

Vendor / Manufacturer	Product	Percent Thimerosal	Notes
Bayer Corporation Diagnostics Division Tarrytown, NY 914/631-8000 bayerdiag.com www.labnews.de	Cortisol 250 Test Kit	None	Sodium azide, a RCRA P-listed toxic substance, used as a preservative.  MSDSs, 1/98
	Estriadiol-6 100 and 500 Test Kit		
	FSH 100 and 500 Test Kit		
	<b>HIV RNA 3.0 bDNA Assay Kit</b> HIV standards and controls Multi diluent 1,2,3,9		
	Progesterone 50 Test Kit		
	Prolactin Test Kit		
	T3 80 and 400 Test Kit		
	T4 100 and 500 Test Kit		
	Testosterone 50 Test Kit		
Becton, Dickinson and Company Franklin Lakes, NJ 800/638-8663 bd.com	<b>Reagents</b> Alkalescens Anti sera Avidin Biotin Bordetella Brucella Candida E coli Enzyme reagent Extraction reagent FA human globulin FA strep group A Febrile antigen Francisella Haemophilus Linker antibody Listeria Low reactive control Negative control Neisseria Positive control Proteus Salmonella (all) Serum blocker Shigella Streptavidin Streptococcus Trichinella USR Vibrio chlorae	0.01-0.10	Manufacturer product list, 2/02
Beckman Coulter, Inc. Miami, FL 800/526-7694 Hematology 800/327-6531 Chemistry 714/993-5321 Cytometry 800/526-7694 beckman.com	<b>Hematology Products</b> 5C cell controls Coulter 4C Coulter-clenz® Coulter Latron primer-1 Coulter scatter packs® Isoton® III Latron control Lyse S® III diff	None	Letter from manufacturer, 9/00  Manufacturer tested, method SM 3112B, minimum detection limit (MDL)= 0.001 mg/L

Vendor / Manufacturer	Product	Percent Thimerosal	Notes
Beckman Coulter, Inc. continued	<b>Cytometry Reagents</b> Diluent 2 Diluent 2 isotonic saline Diluent patient control IgG1-FITC/IgG1-PE Immuno-Brite flourospheres MslgG1-RD1/MslgG1-FITC	None	Letter from manufacturer, 9/00
	<b>Synchron LX®20 Kit</b> Buffers Calibrators Controls Reagents		
Cal-Tag Technical Services Burlingame, CA 800/874-4007 caltag.com	<b>Goat Anti-human Igs</b> Monovalent #H14001 Polyvalent #H17001	None	Sodium azide used as a preservative.  COA from manufacturer and MSDSs, 2/02
Clorox Company Customer Service Oakland, CA 800/292-2200 clorox.com	Bleach	None	Information from manufacturer's senior environmental scientist, 2/02
Dade Behring, Inc. Customer Service Deerfield, IL 800/242-3233 dadebehring.com	<b>C-Reactive Protein (CRP) Reagent Cartridge</b> CRP antibody particle concentrate CRP antibody particle diluent CRP buffer	0.0005 0.01 0.002	Sodium azide also used as a preservative.  MSDSs, 7/03
	<b>Dade Dimension reagents</b> Albumin BUN/urea nitrogen Coagulation controls Drug calibrator IMT dilution check solution Phenobarbital particle reagent* Phenytoin antibody reagent* Salicylate solution	Possible Possible Possible 0.0097 0.001 0.01 0.000065 0.003	Proteinaceous. Products with a high amount of protein tend to contaminate easily and thimerosal is often used in them.  * Sodium azide also used as a preservative, MSDSs 7/03
	Diff Quik Stain Kit	None	Sodium azide used as a preservative.  Manufacturer technical bulletin, 3/00
	Digoxin Pretreatment 2	0.005	Sodium azide also used as a preservative.  MSDS, 7/03
	<b>Dimension Theo Flex Reagent Cartridge</b> Theo antibody reagent Theo buffer Particle reagent	0.002 0.002 0.01606	Sodium azide also used as a preservative.  MSDSs, 7/03
	<b>Unconjugated Estriol Test Kit</b> LEF2 Reagent	<0.5	MSDS and manufacturer technical bulletin, 2/00
Gen-Probe, Inc. San Diego, CA 800/523-5001 www.gen-probe.com	Pace 2 Chlamydia Kit	None	Manufacturer letter, 3/03
	Pace 2C Detection Kit		
	Pace 2 Gonorrheae Kit		

Vendor / Manufacturer	Product	Percent Thimerosal	Notes
Immucor (formerly Gamma Biologicals) Norcross, GA 800/829-2553 immucor.com	Bovine Albumin 22%	None	Manufacturer letter and MSDS, 2/02
	Gamma Fetal Blood Screening Test	None	Sodium azide, chloramphenicol and neomycin sulfate used as preservatives.  Manufacturer letter and MSDS, 2/02
	Immu-Add™ (LISS)	0.01	Manufacturer letter and MSDS, 2/02
Medical Chemical Company Torrance, CA 800/424-9394 310/787-6800 www.med-chem.com	Hematoxylin 1 and 2	None	Manufacturer letter, 2/02
NERL Diagnostics Corporation Portland, ME 800/556-7575 401/438-0386 www.nerl.com	S/P Blood Bank Saline 10L #B3158-3	Possible	Used in other blood bank solutions.
Quidel Corporation Technical Support San Diego, CA 800/874-1517 x1092 quidel.com	CARDS® QS® Strep A Kit	None	Sodium azide used as a preservative.
	Chlamydia Kit		MSDS, 2/02
	<b>CIC-C1q Enzyme Immunoassay Kit</b> Conjugate, diluent and hydrating reagent Complement specimen diluent confirmation	0.2 0.01	MSDSs, 2/02
	HCG Pregnancy Kit (urine/serum)	None	Sodium azide used as a preservative.  MSDS, 2/02
	<b>H. Pylori Kit</b> Negative control Positive control	0.010 0.10	MSDSs, 2/02
Radiometer America, Inc. Westlake, OH 800/736-0600 radiometer.com	Electrolyte for K+ Electrode	<0.005	MSDS, 2/00
Remel ProSpecT® Customer Service Lenexa, KS 800/255-6730 www.remelinc.com/contact	<b>Campylobacter Microplate Assay Kit</b> Conjugate Dilution buffer Negative control Positive control Wash buffer	0.01 0.02 0.01 0.02 0.1	Manufacturer Web site, 2/03
	<b>Cryptosporidium Microplate Assay Kit</b> Conjugate Dilution buffer Negative control Positive control Wash buffer	0.01 0.02 0.02 0.02 0.1	

Vendor / Manufacturer	Product	Percent Thimerosal	Notes
Remel ProSpecT®, continued	<b>Entamoeba Histolytica Microplate Assay Kit</b> Conjugate Dilution buffer Negative control Positive control Wash buffer	0.01 0.02 0.02 0.02 0.1	Manufacturer Web site, 2/03
	<b>Giardia Microplate Assay Kit</b> Conjugate Dilution buffer Negative control Positive control Wash buffer	0.01 0.02 0.02 0.02 0.1	Manufacturer technical bulletin, 9/00
Wampole Laboratories Technical Services Customer Service Princeton, NJ 800/257-9525 wampolelabs.com	<b>Mono Test Kit</b>	None	Manufacturer letter, 3/02

## For More Information

H2E has information about mercury and how to eliminate its use in your facility. It sponsors the Making Medicine Mercury-Free Award—a one-time award given to facilities that have essentially eliminated mercury and developed policies to sustain the elimination. H2E is a partnership of the AHA, the U.S. EPA, the American Nurses Association and Health Care Without Harm <[www.h2e-online.org](http://www.h2e-online.org)>.

The Sustainable Hospitals Project, University of Massachusetts Lowell, offers information on selecting health care products that offer greater occupational safety and less environmental impact than some of the traditional products used. These products include mercury-free alternatives <[www.sustainablehospitals.org](http://www.sustainablehospitals.org)>.

Checking online databases for mercury-containing products can give you an idea of which lab products

may contain mercury. Remember that these databases only include products for which information has been submitted. They do not include all products that contain mercury.

- Northeast Waste Management Officials' Association <[www.newmoa.org/newmoa/htdocs/prevention/mercury/imerc/notification/index.cfm](http://www.newmoa.org/newmoa/htdocs/prevention/mercury/imerc/notification/index.cfm)>.
- Medical Academic and Scientific Community Organization <[www1.netcasters.com/mercury](http://www1.netcasters.com/mercury)>

MnTAP has a variety of technical assistance services available to help Minnesota businesses implement industry-tailored solutions that maximize resource efficiency, prevent pollution and reduce costs. Our information resources are available online at <[mntap.umn.edu](http://mntap.umn.edu)>. Or, call MnTAP at 612/624-1300 or 800/247-0015 from greater Minnesota for personal assistance.